## WHAT IS CLAIMED IS:

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member comprises Kevlar®.

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•	1	1. An improved catheter system of the type including (a) a tubular
ſ	1/2	catheter body having a proximal portion, a distal portion, and a lumen therethrough; (b) a
	2/3/	drive cable rotatably received in the lumen; and (c) a hub assembly secured to a proximal
\(\rangle \)	12g	end of the drive cable, wherein the improvement comprises a rotary transformer disposed
(	ノ <sub>5</sub>	within the hub assembly, the rotary transformer including a first ferrite core and a second
	6	ferrite core, the second ferrite core contacting the first ferrite core with substantially zero
	7	clearance therebetween to promote electrical induction between each core.
	· ·1	The improved catheter system of claim 1, wherein the first ferrite
	2	core is stationary, and wherein the second ferrite core is rotatable.
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<b>J</b> 1	1	The improved catheter system of claim 2, wherein the rotary
n huf mal had had had	2	transformer further comprises a friction limiting material disposed between the rotating
24 É	3	ferrite core and the fixed ferrite core.
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=4 =4	1	4. The improved catheter system of claim 1, wherein the first ferrite
ļ	2	core is biased against the second ferrite core.
	1	5. The improved catheter system of claim 1, wherein the first ferrite
i	2	core is free floating within the hub assembly.
	1	6. An improved catheter system of the type including (a) a tubular
	2	catheter body having a proximal portion, a distal portion, and a primary lumen
	3	therethrough; and (b) a drive cable having a cable body and a cable lumen rotatably
	4	received in the lumen, having at least one lead wire disposed in the cable lumen, wherein
	5	the improvement comprises a support member disposed within the cable lumen to provide
	6	strain relief to the lead wire when the lead wire is subjected to a tensile load, the support
	7	member extending substantially the entire length of the lead wire.
	1	7. The improved catheter system of claim 6, wherein the support
	2	member comprises a flexible multi-filament material.

The improved catheter system of claim 6, wherein the support

1	The improved cameter system of claim 6, wherein the support
2	member comprises a liquid crystal polymer.
1	10. An improved catheter system of the type including (a) a tubular
2 <sup>.</sup>	catheter body having a proximal portion, a distal portion, and a primary lumen
3	therethrough; and (b) a drive cable having a cable body and a cable lumen rotatably
4	received in the primary lumen, having at least one lead wire disposed in the cable lumen,
5	wherein the improvement comprises a strain relief device coupled to a portion of the drive
6	cable, the strain relief device allowing the lead wire to move within the cable lumen when
7	placed in tension.
1	11. An improved catheter system of the type including (a) a tubular
2	catheter body having a proximal tubular portion, a distal tubular portion, and a lumen
3	therethrough, and (b) a drive cable rotatably received in the lumen, wherein the
4	improvement comprises an intermediate tubular portion formed on the tubular catheter
5	body of a transitional material between the proximal tubular portion and the distal tubular
6	portion, the transitional material being of a higher flexural modulus than the distal tubular
7	portion and of a lower flexural modulus than the proximal tubular portion.
0 167	12. The improved catheter system of claim 11, wherein the proximal
2	tubular portion comprises a material taken from the group consisting of a natural or
3	synthetic polymer or plastic material, such as silicone rubber, natural rubber,
4	polyvinylchloride, polyurethanes, polyesters, polyethylene, polytetrafluoroethylene
5	(PTFE), and polyetheretherketone (PEEK).
1	13. The improved catheter system of claim 11, wherein the
2	intermediate tubular portion comprises a material taken from the group consisting of
3	nylons, polyester, polyimides, polyolefins, and blends of such materials.
1	14. An improved catheter system of the type including (a) a tubular
2	catheter body having a proximal portion, a distal portion, and a primary lumen
3	therethrough, (b) a guidewire lumen coupled chaxially with the primary lumen on the
4	distal portion of the catheter, having a wedge in between said lumens; and (c) a drive
5	cable rotatably received in the primary lumen, wherein the improvement comprises a

6	wedge lumen formed in the wedge allowing communication between the primary lume
7	and the guidewire lumen.
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15. An improved catheter system of the type including (a) a tubular
catheter body having a proximal portion, a distal portion, and a lumen therethrough, and
(b) a drive cable rotatably received in the lumen, wherein the improvement comprises the
drive cable comprising a first inner coil, a second inner coil, and an outer coil, the outer
coil being wound in a direction opposite to the inner coils, the first inner coil expanding
against the outer coil and the second inner coil expanding against the first inner coil when
the drive cable is rotated, thereby increasing the column strength of the drive cable.

- 16. The improved catheter system as in claim 15, wherein the outer coil contracts against the first inner coil when the drive cable is rotated.
- 17. An improved catheter system of the type including (a) a tubular catheter body having a proximal portion, a distal portion, and a lumen therethrough, and (b) a drive cable rotatably received in the lumen, wherein the improvement comprises a first tubular member and a second tubular member arranged in a telescoping engagement, wherein the first tubular member is formed at least in part from a material, the material being a plastic or a polymer material, such as polyetheretherketone (PEEK).

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